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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/788,437 | 02/21/2001 | Albert M. Leung | S168 0114 GNM/sks | 5239 |

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EXAMINER

FERGUSON, MARISSA L

ART UNIT

PAPER NUMBER

2855

DATE MAILED: 12/28/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/788,437

Applicant(s)

LEUNG, ALBERT M.

Examiner

Marissa L Ferguson

Art Unit

2855

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-21, drawn to a pressure sensor, classified in class 73, subclass 708.
 - II. Claims 22-29, drawn to a method of fabricating a sensor, classified in class 29, subclass 529.1.
2. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by a materially different process such as molding.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

During a telephone conversation with Gavin Manning on December 12, 2001 a provisional election was made with traverse to prosecute the invention of Group 1. Affirmation of this election must be made by applicant in replying to this Office action.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-12, 16, 17, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gogoi et al. (U.S. Patent 6,156,585) in view of Fung (U.S. Patent 5,589,810). Gogoi et al. teaches the invention claimed pressure sensor comprising a member (106) adherent by stiction (Column 4, Lines 28-34) to a surface of the substrate (303) and the means for heating the member, the surface (107) of the member in contact with the substrate (101), the surface (108) of substrate in contact with the member (102), the means for heating the member comprising an electrically conductive pathway (Column 1, Lines 63-67 and Column 2, Lines 1-11), the electrically insulating layer (202, 302) on a surface member, the substrate comprising silicon (101, Column 1, Lines 58-62), and the member comprising polysilicon (106, and Lines 35-39). However, he does not explicitly disclose the surface roughness, the means for monitoring temperature, the silicon dioxide layer, the bridge extending between cantilever members, cantilever members attached to the substrate by pads, the member length, the bridge having a central collapsed portion, the pattern of plateaus (305) and valleys (Column 3, Lines 30-64) and semiconductor wafer (101) having a surface.

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Fung discloses a bridge member (16) extending between cantilever members (12 and Figure 1), cantilever members attached to substrate by pads (34,35), and the bridge having a central collapsed portion (Column 5, Claim 1).

With respect to the surface roughness, the reference does not specifically discuss roughness. However in this art area, it is common to have some degree of roughness due to the etching technique. Hence, a matter of experimental choice as to the exact degree of roughness. Referring to the means for monitoring temperature, Gogoi et al. discloses that the sensor can be used for various applications (Column 7, Lines 9-30), including heating, air conditioning, thermal detectors and piezoresistive devices, etc., so therefore it would it is clearly apparent that there is some form of means for monitoring the temperature. It is noted with respect to the use of a silicon dioxide layer as claimed, Gogoi et al. at least suggest same in its teaching of a silicon oxide layer (Column 1, Lines 32-47).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device taught by Gogoi et al, to include the structural features as taught by Fung, as well as specific dimensional features claimed for the purpose of improving semiconductor pressure sensors that requires high temperature stability.

5. Claims 13-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gogoi et al. (U.S. Patent 6,156,585) in view of Fung as applied to claims 1-12 above, further in view of Black et al (U.S. Patent 4,463,336).

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Gogoi et al., as modified, discloses the claimed device except the composite pressure sensor comprising first and second pressure sensors, first and second resistors, metallic masking layer, and p-n junctions. Black discloses the composite pressure sensor comprising first and second pressure sensors (Abstract, 17,19 and Figure 10), first and second resistors (24,25), metallic masking layer (Column 3, 67-68 and Column 4, Lines 1-19), and p-n junctions(Column 3, Lines 22-25).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the device of Gogoi et al, as modified, to include the composite pressure sensor comprising first and second pressure sensors, first and second resistors, metallic masking layer, and p-n junctions, as per the teachings of Black, for the purpose of manufacturing ultra-thin microelectronic pressure sensors.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marissa L Ferguson whose telephone number is 703-305-3194. The examiner can normally be reached on (M-F) 7:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin R Fuller can be reached on 703-308-0079.

Marissa L Ferguson
Examiner
Art Unit 2855



Marissa L Ferguson
Examiner
Art Unit 2855

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December 17, 2001